

# Paper Technology Course

## Preliminary Course Schedule

### MONDAY, JANUARY 11 PULPING TECHNOLOGY

#### SESSION 1: 8:00 A.M. - 12:00 P.M.

##### OVERVIEW OF INDUSTRY

- Industry trends, statistics and information sources

##### WOOD AND FIBER RAW MATERIALS

- Discuss wood and fiber sources
- Differences between hardwoods and softwoods, and important fiber properties that affect paper properties

##### PREPARATION OF WOOD AND CHIPS FOR PULPING

- Woodyard operations including debarking, chipping, screening, storage, and recovery

#### SESSION 2: 1:00 P.M. - 5:00 P.M.

##### OVERVIEW OF PULPING

- Primary categories, including chemicals and cooking conditions
- General pulping terminology
- Common pulp properties and tests

##### KRAFT PULPING

- Major types of equipment used in pulping
- Overview of primary operations in the digesters
- Major pulping variables
- Overview of some major kraft pulping trends

##### MECHANICAL AND SEMI-CHEMICAL PULPING

- Primary mechanical pulping processes
- Mechanical vs. chemical and hybrid pulp properties

#### 5:00 P.M.

- Networking Hour with Refreshments

### TUESDAY, JANUARY 12

#### SESSION 3: 8:00 A.M. - 12:00 P.M.

##### PULP PROCESSING

- Overview of fiber line pulp processing including washing, screening and cleaning
- Major equipment types and key operating variables

##### BLEACHING

- Bleaching processes, including oxygen delignification, caustic extraction, peroxide, and others
- Bleaching equipment, chemicals, and reactions
- Trends and environmental issues

#### SESSION 4: 1:00 P.M. - 5:00 P.M.

##### RECYCLING

- Categories of recycled paper and board
- Types of contaminants associated with recycled paper and the problems they cause
- Overview of the different operations and equipment involved with contaminant removal

##### CHEMICAL RECOVERY

- Overview of the major recovery operations, including evaporation, combustion, and recausticizing
- Composition and properties of black liquor and what happens in the evaporators and recovery units
- How pulping liquor is regenerated in recausticizing
- Lime kiln operations at an overview level

### WEDNESDAY, JANUARY 13 PAPER TECHNOLOGY

#### SESSION 5: 8:00 A.M. - 12:00 P.M.

##### INTRODUCTION TO PAPER GRADES AND PROPERTIES

- Important paper and board properties and tests, including strength, optical and printing properties

##### PAPER MILL STOCK PREPARATION

- Refining process, primary effects on fibers, and the effects of refining on paper machine operations and paper properties
- Primary additives used in paper, including strength adhesives, pigments, sizing, and retention aids

#### SESSION 6: 1:00 P.M. - 5:00 P.M.

##### PAPER MACHINE WET END OPERATIONS

- Stock approach system operations prior to the paper machine
- Two main types of headboxes used in papermaking and their internal operations
- Sheet forming process, slice operations, fiber orientation, formation, microturbulence, dewatering, and sheet structure variations
- Sheet forming operations and paper properties
- Forming fabrics

### THURSDAY, JANUARY 14

#### SESSION 7: 8:00 A.M. - 12:00 P.M.

##### PRESSING

- Different types of press section configurations and what happens in a press nip
- What happens to the sheet during pressing
- Pressing variables and trends

##### DRYING

- Drying operations at an overview level, including dryer can internal operations with steam and condensate, major water removal rate differences, and major equipment & operating variables that affect rate of drying
- How drying and sheet shrinkage affect paper and board properties; and the role of felts, draw, and sheet restraint
- Overview of tissue machine yankee drying and creping operations

##### CALENDERING AND WINDING

- Different types of calenders
- Sheet properties and examination of the major calendering variables
- Winding and roll finishing operations

#### SESSION 8: 1:00 P.M. - 3:00 P.M.

##### SURFACE TREATMENTS

- On machine size press operations, including equipment types and the variables that affect starch pick up in the size press
- Primary components in a coating, including pigments, adhesives, and additives
- Differences between roll, air knife, and blade coaters
- Drying of coating, equipment and mechanism

##### EFFLUENT TREATMENT

- Overview of primary and secondary effluent treatment